

Faculty of Science Course Syllabus (revised June 2018)**Department of *Oceanography****OCEA/BIOL/MARI4370**Deep Sea Biology**Fall 2019***Instructor(s):** *Anna Metaxas* *metaxas@dal.ca* *LSC4637***Lectures:** *10:35-11:25* *LSC3652***Laboratories:** *N/A***Tutorials:** *N/A*

*Submit course syllabus to your Department office for posting on the Dept website [prior](#) to the start of term
Submit requests for [final exam exemptions](#) (1000, 2000 and 3000 level courses only) to the Dean's office [at least 2 weeks prior to the start of term](#)*

The following information should be included, as a minimum, in every course syllabus.

Course Description

We focus on the biology of organisms inhabiting the deep sea: physiological adaptations to the physicochemical and geological environment; spatial and temporal distributions of biological assemblages; and regulatory factors of these assemblages, such as currents, food availability, reproduction and recruitment. Also, we delve into unique habitats, such as hydrothermal vent

Course Prerequisites

BIOL 2060.03 and OCEA 2000.06/OCEA2001.03 and OCEA2002.03

Course Objectives/Learning Outcomes

*Knowledge of the environmental conditions in the deep-sea and at chemosynthesis-based habitats
Ecosystem characteristics such as species composition and abundance, diversity, carbon flux
Knowledge of ecological processes such reproduction, dispersal, recruitment, competition and predation in the deep-sea*

Measurement of spatial and temporal patterns in abundance

Team work

Scientific presentations

Scientific writing

Assessment of the scientific literature

Course Materials

*The course has no required textbook. Recommended textbooks are placed on 2-h reserve in the Killam Library. They are: (1) Gage JD, Tyler PA (1996) *Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor*. Cambridge University Press (2) Van Dover CL (2000) *The ecology of deep-sea hydrothermal vents*. Princeton University Press*

The course does not have a website but is on Brightspace

Course Assessment

Include **dates and times** for all tests, quizzes and exams, including lab exams. If known, include due dates for assignments. Note any scheduled elements held outside of class time (e.g., mid-terms, field trips).

NOTES: (1) An exemption is required for 1000 to 3000 level courses if you are not planning to hold a final exam scheduled by the Registrar's Office. Submit your syllabus along with your request (**and reason for the request**) to the Assistant Dean (scieasst@dal.ca) at least 2 weeks prior to the start of classes.

Component	Weight (% of final grade)	Date
Tests/quizzes (list)	Test 1 (20%)	28-10-2019
	Test 2 (20%)	2-12-2019
Final exam	N/A	(Scheduled by Registrar)
Assignments (list)		
Other course requirements		
Oral presentation	20%	Throughout the term
Term paper	30%	18-11-2019
Participation in discussions	10%	Throughout the term

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

Course Policies

Penalty for late submission of paper, 10% per day

University policy on plagiarism and cheating will be strictly enforced. You do have the option of submitting a Student Declaration of Absence form in this course (See link below for more information). The form is posted on Brightspace and should be submitted by e-mail to the course Instructor. Please note, that submission of the form **does not provide an automatic exemption** from any academic requirements that were missed or late during an absence. Any alternate coursework arrangements for missed or late academic requirements are at the discretion of this course's instructor(s).

Course Content

Part I: The deep-sea environment
Physical and chemical properties
The benthic boundary and nepheloid layers
Vertical patterns in abundance
Vertical patterns in diversity
Vertical zonation in community structure
Biogeography of the deep sea
Seasonality, episodicity
Food resources, energetics and metabolism
Growth, reproduction (timing, behaviour, success)
Larval biology, dispersal and recruitment

Example habitats: Seamounts

Example habitats: Abyssal plains

Gulf of Maine Discovery corridor: a case study

Part II: Hydrothermal vents and cold seeps: special habitats in the deep sea

Geological formation, physical and chemical environment

Energy flow

Food web structure

Faunal physiological adaptations

Spatial distribution of ecological assemblages

Reproduction and dispersal

Mariana Forearc – a case study

Cold seeps: Geological formation and chemical environment, energy flow, food webs

Anthropogenic impacts on the deep sea